DEPARTMENT OF THE ARMY JACKSONVILLE DISTRICT, CORPS OF ENGINEERS P. O. BOX 4970 JACKSONVILLE, FLORIDA 32201

SAJBP

22 November 1966

SUBJECT: Central and Southern Florida Project, Everglades National Park Water Supply--Canal 123 (Miami Canal)

TO: Division Engineer, South Atlantic

- l. Scope and purpose.--This report presents the design for the construction of a canal between Pumping Station 8 and Structure 151. This canal, (C-123), is alined along the west side of the existing Miami Canal except at the north and south ends where it follows the Miami Canal. Its construction is a part of the interim plan to improve the conveyance of water to the Everglades National Park. A survey-review report study of the overall plan for Everglades National Park water supply is now in progress with a scheduled completion date during the first quarter of the Fiscal Year 1968.
- 2. Authorization. -- Construction of Canal 123 is considered to be within the scope of the authorized project since it will provide facilities to serve other project purposes as well as to improve the capability for supply of water to the park. (This authorization was implied by a letter from General Jackson Graham, Director of Civil Works, to Senator Allen J. Ellender, dated 10 March 1966.) Insofar as project cost sharing is concerned, Canal 123 is considered to be 1954 Authorization (80 percent Federal, 20 percent non-Federal) since it supplements the works in the area which were authorized in 1954.

 Shows how easy it is when really want to do it!
- 3. Location and description. -- The location of proposed canal 123 with respect to the overall project is shown on plate 1. Plate 2 shows the proposed canal in relation to the other works in the vicinity of Conservation Area No. 3.
- 4. Local cooperation. -- The State of Florida, acting through its agencies, the Florida Board of Conservation and the Central and Southern Florida Flood Control District, has agreed to: (1) supply water for the park, (2) pump the water to the conservation areas at maximum rates when

Who pay How much 3 why?

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stages in Lake Okeechobee are such that regulatory discharges are required, and (3) contribute 20 percent of the construction costs. These agreements were made in correspondence of 24 January 1966 from the Flood Control District, and 15 March 1966 from the Florida Board of Conservation.

- 5. Coordination of proposed plan of improvement. -- The State and Federal wildlife agencies are in agreement with the plan of improvement recommended herein.
- 6. Geology and soils .-- a. Physiography and drainage .-- Canal 123 lies entirely within the Florida Everglades which is a large gently sloping basin that was originally the Pliocene sea bottom. During the earlier Pleistocene glacial stages of the northern states this floor was subject to erosion, solution, then deposition of the first four beds of the Fort Thompson formation, and possibly slight folding. Then, probably during Sangamon interglacial time, the Miami oolite, Anastasia formation, and the Fort Thompson formation were deposited over much of it. Later, these younger deposits were subjected to erosion and solution and still later were partly covered by sand of Pamlico age. During late Wisconsin time, the sea withdrew leaving a large area that became occupied by fresh-water marshes and lakes in which solution and erosion were at first dominant, then deposition of the Lake Flirt marl commenced. In recent times deposition became dominant, and beds of fresh-water (Lake Flirt) marl with peat and muck were laid down. This association of principally organic soils is 8 feet thick near Lake Okeechobee but gradually thins out in all directions to the margins of the Everglades. Primary drainage patterns trend northwestsoutheast.
- b. General geology.--A limited number of core borings have been completed along the north reach of the proposed alinement prior to publication of this report. The location of the alinement was not finalized in sufficient time for all field investigations to be completed for inclusion herein. In general, the geology of the area is relatively uniform. In addition, core borings located at either end of the project and about 1,000 feet off the proposed alinement have been made in connection with other projects. These, with the field investigation in progress, are considered indicative of the materials to be encountered during construction. A geologic section has not been prepared since present core boring information is limited. The core borings and other information available in the general area

indicate that the surface material is composed of approximately 3 feet of peat and organic Lake Flirt marl. Underlying the organic soils is about 7.0 feet of interbedded hard and medium limestone of the Miami Oolite and Ft. Thompson formation. Approximately 10.0 feet of shelly, silty sand with numerous thin lenses of medium hard limestone can be expected beneath the limestone.

- c. Excavation. -- It is expected that blasting operations would be required for excavation along the canal alinement.
- 7. Alternative plans considered. --a. Parkway borrow canal route. --This plan investigated the possible use of the northerly reaches of Miami Canal south of Structure 8 to join the portion of Everglades Parkway's south borrow canal which extends eastward from the Miami Canal, to convey water to Levee 68A borrow canal, thence, through it and the Levee 67A cutoff borrow canal to Levee 67A borrow canal and to Control Structure 151. This plan was rather circuitous and not as economical as the one recommended below.
- b. Enlargement of Miami Canal. -- This plan considered the enlargement of Miami Canal to provide a conveyance capacity of 500 c.f.s. in the reach which has not been improved by previous project construction. Original excavation of the Miami Canal by others in the Canal 123 reach, generally consisted of removal of muck overburden and its placement in mounds parallel to the canal. In certain areas there has been grass and thick tree growth on the muck mounds. Since enlargement of the Miami Canal would result in destruction of the trees and grass, which are beneficial to the deer herd, it was decided to consider a new canal alinement parallel to the existing canal at a distance which would preserve existing vegetation. This is the same alinement as that of the plan recommended below.
- c. Perimeter routes.--Other alternative routes were considered which would: (1) extend from Structure 8 eastward along the north boundary of the conservation area and thence southward to join Levee 68A borrow canal; and (2) extend from Pumping Station 8 southward along the westerly boundary of the conservation area to Structure 12 at its southerly extremity. Both were discarded because estimated construction cost appreciably exceeded that of the recommended plan. In addition, those plans would provide a much lower degree of flexibility than the recommended plan.

d. Recommended plan .-- In addition to the above studies, investigations were made as to the feasibility of modifying the Miami Canal plan, as described in b, above, to provide a design capacity of 1,000 c.f.s. rather than the 500 c.f.s. that was originally considered. Structure 151 is capable of delivering 700 c.f.s. eastward toward the Miami area. Levee 67A borrow canal enlargement, extending south from Structure 151 to Structure 12, is now under construction. It will be capable of discharging 1,000 c.f.s. to the park at Structure 12. Thus, the capacity of the conveyance canals flowing southward to Structure 151 would need to total at least 1,700 c.f.s. If the Miami Canal conveyance route could deliver only 500 c.f.s., a deficiency would result that would prevent full employment of other available facilities. Although the south borrow canal of the Everglades Parkway (plan a, above) would have a sufficient section to convey 1,000 c.f.s., the cost of enlarging the borrow canals for Levees 67A, 67A cutoff, and 68A from their conveyance capacity of 1,000 c.f.s., as is now being provided by construction under way, to at least 1,700 c.f.s. would have exceeded the cost of excavating the new 1,000 c.f.s. canal parallel to the existing Miami Canal. Test runs have shown that Pumping Station 8 is the more efficient and economical to operate of the two pumping stations, Structures 7 and 8. Each pump at Structure 8 is designed for capacity discharge of 1,040 c.f.s., so that the pump would be idle half the time if the canal had a capacity of only 500 c.f.s. If a single pump at Structure 8 was discharging 1,040 c.f.s., and the canal would only convey half that amount, the excess would move laterally from the canal into the sawgrass areas of Conservation Area No. 3A. That lateral flow would further complicate the problems of the Everglades deer herd and would in effect be wasting water since the excess does not readily return to the canal when pumping is stopped. Increasing the size of Canal 123 would also increase the gravity discharge potential of the system so that gravity flow could be used rather often without any pumping costs. With the larger canal it would be possible to lower the levels of the water in the area of the deer herd and move it more promptly to the southern part of the conservation area to prevent discomfort to the deer in wet periods. Greater flexibility of operation would also be possible with the larger conveyance canal since 1,000 c.f.s. could be pumped from Pumping Stations 7 or 8, or various combinations of the two. The total initial costs of 500 and 1,000 c.f.s. plans for the entire length of the new

canal are estimated at \$810,000 and \$1,550,000* respectively. In view of these considerations, a design capacity of 1,000 c.f.s. has been used for the canal. This capacity was approved by ENGCW-OC 2nd Indorsement of 28 October 1966 to SAJCW letter of 11 August 1966, subject: "Improved Conveyance of Water from Lake Okeechobee to Miami Area and Everglades National Park."

- 8. Plan of improvement.--a. General.--The proposed plan of improvement would help to convey water to the Everglades National Park in sufficient amounts to supplement water needs during periods of inadequate rainfall such as experienced in past years. The plan would also lower the water levels in the northern portion of Conservation Area No. 3A, thereby improving habitat conditions for the deer herd during wet periods.
- b. Alinement.--The north end of the proposed canal would start at the southern end of the Pumping Station 8 discharge channel. From that point it would run in a southeasterly direction, parallel to the existing Miami Canal, with their centerlines 900 feet apart. At the Everglades Parkway, Canal 123 would intersect the north borrow canal and runs east to the existing parkway bridge. After going under the bridge, Canal 123 would diverge from Miami Canal and then run southeast, parallel to and west of Miami Canal with 200 feet between their centerlines. In the vicinity of the South New River Canal the proposed canal would be joined to a previously improved section of the Miami Canal.
- c. Canal design. -- As mentioned above, the canal design is based on a discharge of 1,000 c.f.s. Additional criteria was a water surface elevation at Pumping Station 8 at design normal water surface for lake regulation of elevation 13.9 feet** with an elevation 9.9 feet in the Levee 67A borrow canal at Structure 151.

NOTES: *This estimate was made August 1966; however, for this report it has been reestimated using a portion of the surveys now in progress. The new estimate shown in table 1 is \$1,676,000. The \$126,000 increase results from relocation costs not previously estimated, together with a slightly increased excavation quantity resulting from better survey information. Since those factors would apply to both the 500 and 1,000 c.f.s. designs, the difference between the estimates would remain constant.

**All elevations in this report are based on mean sea level datum and are above the datum plane unless otherwise noted.

SAJBP 22 November 1966 SUBJECT: Central and Southern Florida Project, Everglades National Park Water Supply--Canal 123 (Miami Canal)

The canal design is as follows:

Approximate Station	Design Water Surface El. (Feet m.s.l.)	Bottom Elevation (Feet)	Bottom Width (Feet)
1607+0 (4 mi. so. S-8)	13.4	-6.0	
1700+0	13.0	-0.0	20
2128+0	11.9	-6.0	30
2565+0 (Junction with pre-		-8.0	30
viously improved Miami Canal)			
Canal)	10.9	-4.0	50
2863+0 (L-67A at S-151)	9.9		

Based on cross sections taken in 1940 in that reach of the Miami Canal from a point north of its junction with the South New River Canal to Structure 151, there appears to have been a sufficient section for conveying 1,000 c.f.s. Due to possible silting which may have occurred in the intervening years it may be necessary to dredge this reach of the Miami Canal. Any material dredged from the canal would be deposited on the opposite side of the existing spoil banks and allowed to flow away from the canal. Those cross sections were used inasmuch as they are the only surveys available until the surveys now in progress have been completed.

d. Spoil disposition.--The material excavated for the land cut portion of the canal would be deposited on both sides to form islands 500 feet long with side slopes of 1 on 3. These islands would be separated by 100-foot gaps alined with the gaps matching on opposite sides of the canal. The width of the islands would generally vary between 30 and 40 feet with the top of the islands being 6 feet above existing ground levels. Typical sections of the canal and islands are shown on plate 3. The islands will be located entirely within the canal rights-of-way so that separate spoil areas will not be required. The islands will be grassed and trees planted as discussed below. This work will serve to prevent soil erosion as well as to provide grazing and an improved habitat for deer in the area.

- e. Grassing would extend over the entire island area. Grassing operations would include fertilizing, seeding, refertilizing, and maintenance of the grassed areas under the initial contract for a minimum of 60 days. Fertilizer would be applied at the rate of 50 pounds of nitrogen, 50 pounds of phosphoric acid and 50 pounds of potash per acre. Seeding would be done with a mixture of 20 pounds of pensacola bahia and 20 pounds of common bermuda per acre. All grassed areas would be refertilized after 45 days with ammonium nitrate. A minimum of 33 pounds of nitrogen would be used per acre. Water would be applied in sufficient quantities to insure good grass growth.
- f. Tree planting on the spoil mounds would consist of trees or shrubs native or adapted to the soil and climatic conditions. Plantings would include species that would give a maximum amount of wildlife food and habitat and also restore the area to a semblance of its natural state. Tree maintenance under the initial contract would be a minimum of 90 days.
- 9. Bridge improvement.—The proposed plan of improvement for Canal 123 (Miami Canal) would require the construction of a bridge to accommodate sportsman-owned half-track and swamp buggy-type vehicles that travel in Conservation Area No. 3A. The bridge, a local interest responsibility, would be located opposite an existing ford across the Miami Canal at approximate station 1912+00, which is about 5.9 miles north of the Everglades Parkway. A 120-foot (plus or minus) long by 14-foot wide (roadway) concrete bridge would be constructed over a channel with a 30-foot wide bottom at elevation minus 6.0 feet. The total estimated cost of the bridge including contingencies, engineering, supervision and inspection, and overhead is \$43,000. Excavation cost for the bridge is included in the canal excavation costs. The general details of the bridge are shown on plate 4.
- 10. Relocations.--There are two crude-oil pipelines approximately 5.0 miles north of the Everglades Parkway. One is 6 inches and the other 4 inches in diameter. Those relocations would be provided by and at the expense of local interests.

- ll. Quantities and cost estimates.--The estimated quantities, construction costs and Federal and non-Federal costs are given in table 1. The estimated construction time for the project, including the bridge, is 18 months.
- 12. Recommendations. -- Due to the advantages both to Everglades National Park and other water users in the Miami area and to the deer in Conservation Area No. 3A, it is recommended that the plan described in paragraph 8 above be approved. Advertisement of this work is scheduled for 15 March 1967.

2 Incls (10 cys)

1. Table 1

2. Plates 1 through 4

R. P. TABB Colonel, Corps of Engineers District Engineer

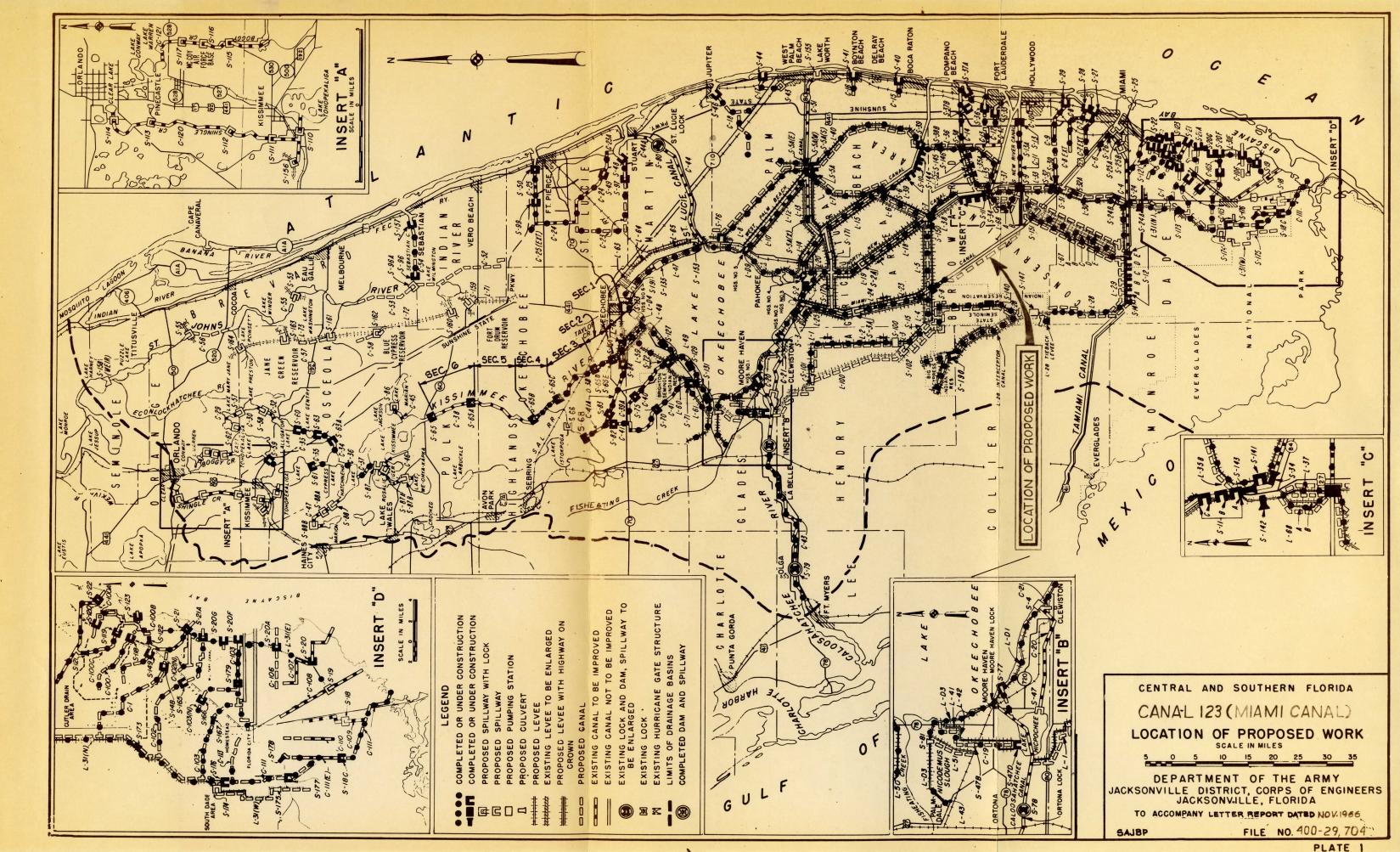
TABLE 1 Canal 123 Total cost

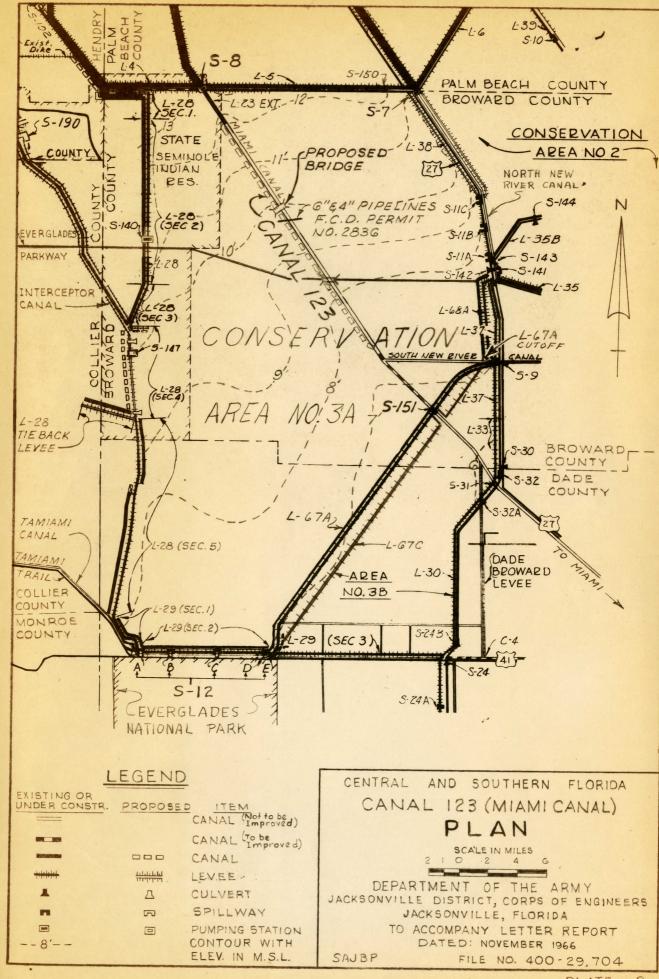
Quantities and cost estimates (Date of estimate: November 1966)

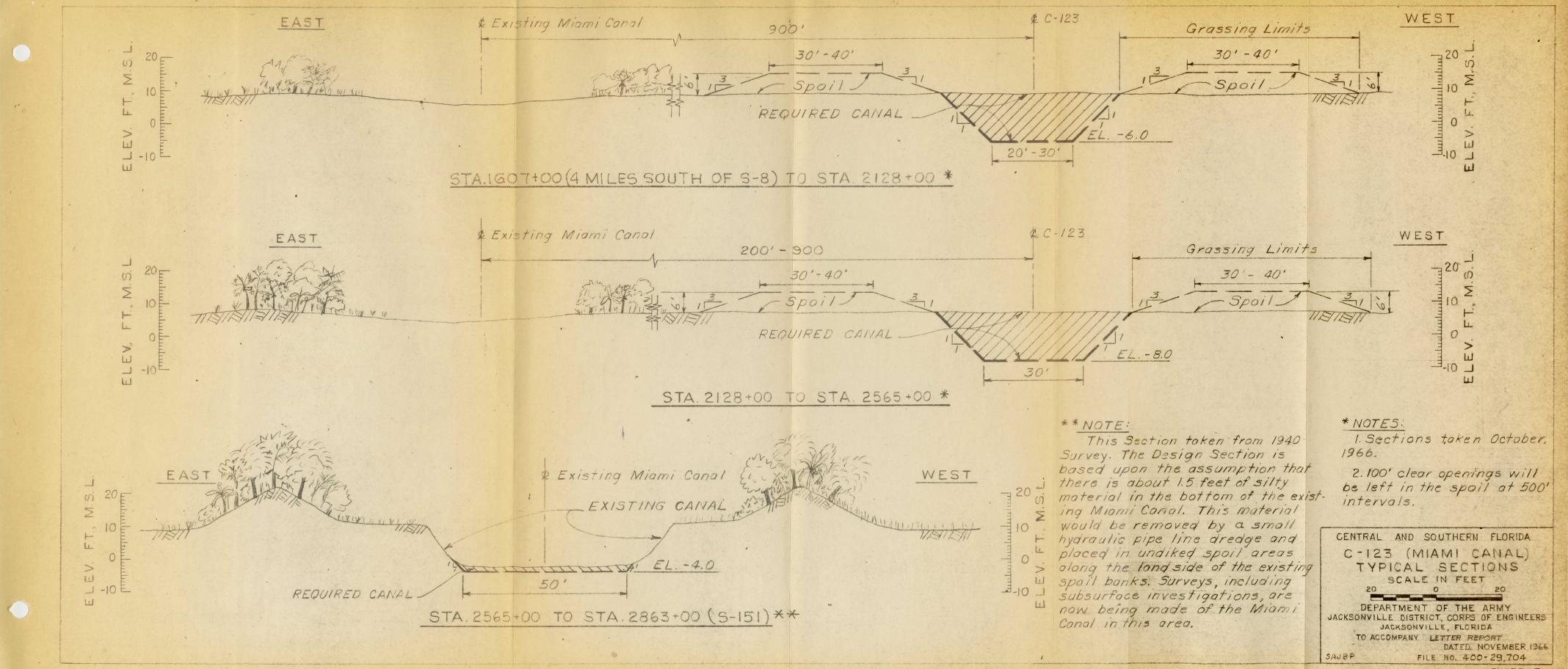
CONSTRUCTION COSTS		
anal 123 (Miami Canal)		
Excavation, unclassified	1	
2,691,000 cu. yd. @ \$0.47 ±	\$1,265,000	
Contingencies (12 pct.)	152,000	4- 1
Contract price		\$1,417,000
Government supervision and inspection,		
including overhead and retirement		113,000
Construction costs		1,530,000
PEDERAL COCMC		
FEDERAL COSTS		
itial		
80 pct. of construction costs	1.224.000	
Engineering and design, including overhead		
and retirement	98,000	
Initial Federal costs		1,322,000
nual		
Federal investment subject to interest		
and amortization		(1 300 000)
Interest at 2.5 pct	33,000	(1,322,000)
Amortization at 2.5 pct. for 50 years		
	= 3	
Annual Federal costs		47,000
		inued)

Item	Amount	To	tal
NON-FEDERAL COSTS			
Initial			
20 pct. of construction costs	\$306,000		
Lands:			
Rights-of-way			
Private relocations (pipelines)	5,000		
Public relocations (bridge)			
Initial non-Federal costs		\$	354,000
		Ψ	371,000
Annual			
Non-Federal investment subject to interest			
and amortization		(354,000
Interest @ 2.5 pct	9,000		
Amortization @ 2.5 pct. for 50 years	4,000	1	
Maintenance	4,000	2	
Ophahon		1 /	
Annual non-Federal costs		/(17,000
Grand totalinitial Federal and non-Federal costs		\$1,	676,000
Grand totalannual Federal and non-Federal costs-		\$	64,000
	,	1 =	2 7
	<u> </u>	1 Op	leale
		1	

in Conservation Area No. 3 for project use.









UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE

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APR 2 1 1967

BUREAU OF SPORT FISHERIES AND WILDLIFFUBLIC WORKS. DEPT.

PEACHTREE-SEVENTH BUILDING
ATLANTA. GEORGIA 30323

April 3, 1967

District Engineer U. S. Army, Corps of Engineers Jacksonville, Florida

Dear Sir:

By letter of December 1, 1966, the Chief of your Design Branch (SAJBP) requested our review and comments on your letter report on Canal 123 (Miami Canal), a part of the Central and Southern Florida Flood Control Project. The authorization for construction of Canal 123 is considered to be within the scope of the authorized project (Public Law 780, September 3, 1954). This authorization was implied by a letter from General Jackson Graham, Director of Civil Works, to Senator Allen J. Ellender, dated March 10, 1966. Our comments are submitted under provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

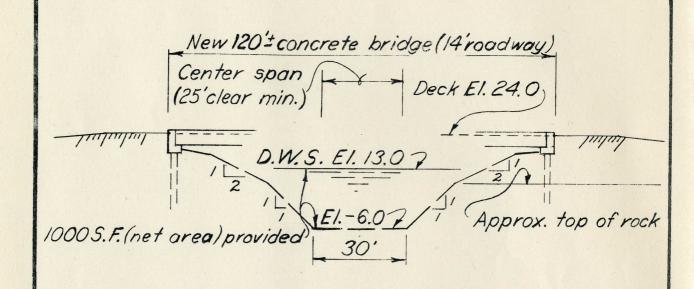
DESCRIPTION OF PROJECT

The purpose of the canal is to improve conveyance of water to Everglades National Park in sufficient amounts to supplement water needs during periods of inadequate rainfall. The design dimensions, 16 to 18 feet deep by 20 to 50 feet wide, will provide a discharge capacity of 1,000 c.f.s. The plan will also lower water levels in the northern portion of Conservation Area 3A.

The proposed Canal 123 alignment parallels the existing Miami Canal across Conservation Area 3A (plate 1). The northern end of the canal will start at the southern end of Pumping Station 8 discharge channel. From that point, it will run in a southeasterly direction, with its centerline 900 feet to the west of the existing Miami Canal. At Everglades Parkway (Alligator Alley), C-123 will intersect the north borrow canal and run east to the existing bridge for this highway over the Miami Canal. After passing under the bridge, C-123 will diverge from the Miami Canal and continue southeast on the west side of the Miami Canal with 200 feet between their centerlines. In the vicinity of the South New River Canal, the proposed canal will be joined to a previously improved section of the Miami Canal.

The spoil material excavated for the land cut canal will be deposited on both sides to form islands 500 feet long with 30 to 40 feet top widths. These islands will be separated by 100-foot gaps opposite each other on

APR 2 1 1967



STA. 1912+00±

NOTE: Bridge normal to flow.

SCALE IN FEET
30 0 30 60

CENTRAL AND SOUTHERN FLORIDA

CANAL 123 (MIAMI CANAL) BRIDGE

SCALE AS SHOWN
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA
TO ACCOMPANY LETTER REPORT

DATED NOVEMBER 1966

JBS FILE NO. 400-29,704

PLATE 4

both sides of the canal. The side slopes of the spoil islands will be 1 on 3 up to 6 feet above existing ground levels, or 2 feet above the 20-year flood level.

The islands will be grassed and trees planted to prevent soil erosion as well as to serve wildlife purposes. Trees and shrubs adapted to the soil and climatic conditions will be planted.

The canal will be bridged to accommodate half-track and swamp buggy vehicles at a point about 5.9 miles north of Alligator Alley.

WILDLIFE RESOURCES

The principal vegetational components of Conservation Area 3A are the sawgrass, wet prairie, slough aquatic, and tree island communities. Willow communities are also common. The sawgrass communities are characterized by large sawgrass. The wet prairie communities are composed of relatively low stature plants such as beakrush, spike rush, and grasses, including maidencane and other panic grasses. The tree island communities consist of growths of woody vegetation which occur on sites slightly higher than the surrounding marsh. Tree islands provide refuge and forage for deer during unusually high water levels. The slough aquatic communities are narrow, natural drainage channels that are usually water filled most of the year. These are important to deer because of the abundance of food plants they supply. Willow occurs in practically every vegetative type but is most abundant in disturbed areas adjacent to levees, drainage ditches, and canals, and in other elevated sites.

The north portion of Conservation Area 3A contains the better habitat for deer. Under favorable conditions, the deer population in Area 3A was estimated to be 8,000 animals by the Florida Game and Fresh Water Fish Commission. The old Miami Canal banks north of Alligator Alley have reverted to dense growths of native vegetation that furnish both cover and food for this deer herd. The portion south of Alligator Alley has not developed as wide a band of vegetation as the northern portion.

The old Canal is also excellent habitat for alligators, an animal on the rare and endangered list of the Department of the Interior. The canal channels furnish food and cover, while the slightly elevated banks are utilized for construction of nests. The young alligators find refuge from their natural enemies in aquatic growths of the canal and banks.

The slough areas in the conservation area are utilized by wintering waterfowl and wading birds. The waterfowl feed upon the aquatic vegetation in this area, while the wading birds utilize the numerous small fish and other animals found here.

PROJECT EFFECTS

The recommended alignment and enlarged size for Canal 123 are more satisfactory than others which have been considered. The alignment will minimize damage to wildlife habitat. The 1,000 c.f.s. capacity is believed necessary to prevent the flooding which at times causes stress to the deer herd, while also delivering more needed water to the Everglades National Park. The larger canal will assist in lowering water levels in the deer area and reduce the duration of flooding during periods of high rainfall. These factors critically limit fawning success. The 100-foot gaps left in the spoil banks should allow unimpaired lateral flow of water into the canal.

The spoil deposition plans should help provide refuge for deer during high-water periods. We understand several native shrub and grass species will be planted on the spoil islands. We believe the spoil islands should be planted to improve wildlife habitat by providing food and cover for both deer and other wildlife. The plantings will also restore to the area a semblance of its natural state. We recommend that aeschynomene, willow, southern waxmyrtle, and southern baccharis be used in your planting program.

The planned bridge north of Alligator Alley will provide east-west access for sportsmen's half-track and swamp buggy vehicles in the northern section of the area.

In summary, we concur with the alignment and capacity for Canal 123 which you have recommended, and we recommend that the spoil islands be planted with native trees, shrubs, and grasses that are favored by deer and are high in nutritional value. Suitable species are aeschynomene, willow, southern waxmyrtle, and southern baccharis.

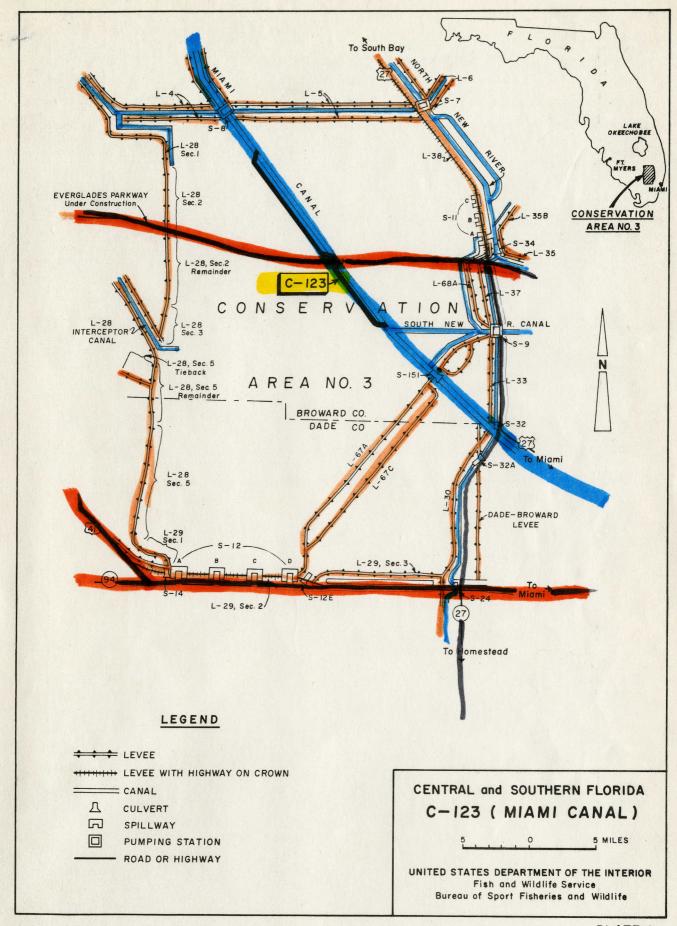
This report has been reviewed and concurred in by the Florida Game and Fresh Water Fish Commission. A copy of Director Frye's letter is attached.

Sincerely yours,

James R. Fielding

Acting Regional Director

Attachments 2



STATE OF FLORIDA

GAME AND FRESH WATER FISH COMMISSION TALLAHASSEE

32304

Dr. O. E. Frye, Jr., DIRECTOR
H. E. Wallace, ASSISTANT DIRECTOR

March 27, 1967

Regional Director
United States Fish and
Wildlife Service
Peachtree - Seventh Building
Atlanta, Georgia 30323

Dear Sir:

The Florida Game and Fresh Water Fish Commission has received the proposed plan of improvement for Canal 123 (Miami Canal) of the Central and Southern Flood Control District project.

We have received your report on this project and concur with your recommendations.

Sincerely yours,

FLORIDA GAME AND FRESH WATER FISH COMMISSION

O. E. Frye, Jr. Director

OEF/S/rs

CENTRAL AND SOUTHERN FLORIDA

GOVERNING BOARD



RILEY S. MILES, KISSIMMEE Chairman

R. L. SEARLE, CORAL GABLES
Vice Chairman

T. R. TOMLINSON, MELBOURNE
C. A. THOMAS, LAKE HARBOR
ROBERT W. PADRICK, FORT PIER

IN REPLY REFER TO:

6-C123 X 6-107

March 2, 1967

Mr. John J. McCue Director, Public Works Department Metropolitan Dade County 1351 N.W. 12th Street Miami, Florida 33125 FDRP
WHH

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MAR 6 1967

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Dear John:

This will acknowledge somewhat tardily your letter of December 14, 1966 with respect to the Corps of Engineers' letter report on Canal 123. Enclosed herewith are copies of the letters, resolutions, etc. which you requested with respect to the pumping agreements entered into by the Flood Control District, State Board of Conservation and the Corps of Engineers.

I believe you will note that agreement in principle with the proposal of the Corps of Engineers was made by this District's letter of January 24, 1966, which was no doubt the source of the item in the February, 1966 issue of "Florida Conservation News".

Certainly there is some additional cost involved in placing the spoil in the manner which is being provided in the contract to excavate Canal 123. This is largely occasioned by leaving the 100-foot wide gaps 600 feet on centers. This gapping is not basically a requirement either for the deer or some other non-Project use. It would be needed in any event for dispersal of water. Perhaps another factor which would increase the cost of this work is the requirement to shape the spoil areas. However, recent directives from the executive branch of the Federal government with respect to beautification and preservation of esthetic values is being applied by the Corps to all items of the Central and Southern Florida Project. These costs, whatever they may be, cannot be assigned to the comfort of the deer. Insofar as spreading the spoil at an elevation of six feet above ground, we do not believe that any additional cost is occasioned by this. The cost of excavating and disposing of the spoil is estimated at \$.47 per cubic yard, which compares favorably with prices which the Corps has received on prior jobs in which no special treatment was required.

Mr. John J. McCue March 2, 1967 Page 2

With respect to the cost of pumping, the Flood Control District is being reimbursed as the attached agreement of August 26, 1966 indicates. We are negotiating for the pumping done for the Park through June 30, 1966 and have submitted a preliminary bill for 129,000 acre feet in the approximate amount of \$35,000. Our records are subject to audit by the Corps of Engineers before we can submit a final bill for payment, and I assume this will be done in the near future. The pumping in addition to that 129,000 acre feet is the sole responsibility of this District and includes all of the normal pumping for flood control, as well as some pumping for Lake regulation from which the National Park does not benefit.

With respect to the other work considered to be part of the emergency plan to convey water through the conservation areas for the benefit of the lower east cost and the Everglades National Park, no reports were issued by the Corps prior to the issuance of plans and specifications, primarily because of the lack of time.

If we may furnish you with any further information, please call on us.

Sincerely,

G. E. DAIL, JR. Executive Director

GED:mtm Enclosures Mr. G. E. Dail, Jr. December 14, 1966 Page 2

Apparently Table I purports to list the total annual non-federal cost; but although it shows the maintenance cost it apparently does not include anything for operation or pumping costs! We would appreciate copies of any and all information available as to these annual operation and pumping costs and how they are to be shared, not only as relates to Canal 123 but to the other parts of this plan.

Three other parts of this \$3\frac{1}{2}\$ million plan are already under construction. One of these is the L-67A Extension south of Tamiami Trail which had been considered as part of the authorized works prior to this emergency plan. The other two are the enlargement of existing canals from Pump Station 7 to Structure S-151 and from Structure S-151 to Structure S-12. These two contracts are for \$780,750 and for \$897,500. We do not find in our files similar letter reports for these three portions of the emergency plan, and we request that if such reports have been prepared, copies be forwarded to us.

Very truly yours,

Original signed by John J. McCue Director

JJMcC:MJB:jw

December 14, 1966

Mr. G. E. Dail, Jr.
Executive Director
Central & Southern Florida
Flood Control District
901 Evernia Street
West Palm Beach, Florida 33402

Dear Mr. Dail:

For Back

This will acknowledge receipt of the Corps of Engineers' Letter Report on Canal 123 (Miami Canal). It is of interest to note that this report, dated November 22, 1966 finds the authorization for the considered works to be "implied by a letter" dated March 10, 1966; whereas approval by the State and the Corps of Engineers of the Everglades National Park plan (including this canal) had already been announced by the "Florida Conservation News" in February 1966—the authorization was "found" after the plan had been approved!

This letter report repeats the previously published information that the State of Florida has entered into an agreement with the Federal Government to pump water to the conservation areas for eventual delivery to the Everglades National Park and states that these agreements were made in correspondence of January 24, 1966 and March 15, 1966 from the Flood Control District and the Florida Board of Conservation. In order that we may be informed as to the cost-sharing for the cost of pumping both to the Everglades National Park and to the eastern urban areas, we will appreciate copies of these letters.

We note that the recommended plan for the enlargement of the Miami Canal from Pump Station S-8 to Structure 151 gives considerable attention to the comfort of the deer during wet periods but does not include any information as to what extent this consideration may have increased the cost of the canal. We would appreciate your comments on this.

12/19/6

AGREEFENT BETWEEN THE CORPS OF ENGINEERS
AND THE CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT
ESTABLISHING BASIS OF PAYMENT FOR PUMPING WATER
FOR RELEASE TO EVERGLADES NATIONAL PARK
August 26, 1966

- I. The Corps of Engineers and the Central and Southern Floride Flood
 Control District mutually agree to adopt the Interim Plan for Lake Okeechobee
 regulation and the Schedule for Transfer of Water from Lake Okeechobee to
 Everglades National Park, and lower East Coast Area, as described herein.
 The Plan will be implemented on the basis of conditions herein described and
 in accordance with the Interim Schedule attached. Each agency will undertake
 its respective responsibility in consonance with the Plan. The Schedule may
 be modified by mutual agreement during the course of operation.
- 2. The Flood Control District agrees to pump water from Lake Okeechobee, in addition to or in conjunction with pumping for lake regulation as required. The Corps agrees to reimburse the Flood Control District for all such pumping required and performed by the District on the basis of water released to the Park at Structure 12 by the Corps, all in accordance with the procedures and schedule set forth herein. The actual method and basis for measurement and reimbursement rates shall be as set forth hereinafter. This Agreement shall be subject to review annually.
- chobee to Conservation area No. 3A for release to the lower East Coast area and to the Park whenever it is necessary to lower the lake level for flood control and at such other times when water is available in the lake in accordance with the attached Lake Regulation Schedule and required by the Park and/or the lower East Coast Area. Pumping by the Flood Control District solely for lake regulation is not reimbursable. When conditions permit, the Flood Control District has the option of transferring water from the lake by gravity at Pumping Station 7 and/or Pumping Station 8 instead of pumping. Such releases by gravity are not reimbursable. This Interim Plan has been incorporated into the Interim Regulation Schedule for Lake Okaechebee, as shown on the attached Schedule and as described below. Full implementation of the Plan to provide a dependable water supply for the Park when water levels in Conservation Area No. 3A are below regulation is dependent on completion of emergency construc-

tion measures for enlargement of North New River and Mismi Canals, and Levee 67 and 68 Canals in their reaches between Pumping Stations 7 and 8, and the basder canal isomediately morth of 5-12. Meanwhile, operations shall approach the objectives of this Plan as electly as physical restraints permit. Actions to be executed when lake levels are in the somes shown on the attached Schodule are as follows:

- a. Zones A and R -- When lake stages are in these somes regulatory discharge will be required to lower the labe to safe levels which are represented by the line between Zones B and C. The Flood Control District will pump water from Lake Okaschobes to the conservation areas by use of all four appropriate pumping stations to their full practicable capacities when such pumping will not interfere with meintenence of satisfactory water levels in the agricultural area canals. The Corps will reimburse the Flood Control District for pumping, based on releases of 1,000 c.f.s. to the Park at Structure 12. In these zones required regulatory discharges will be based on 30-day forecasts of inflow conditions and other physical factors affecting lake stages with the objective in mind of returning lake stages to regulation within a 30-day period. Required gravity regulatory releases by way of Caloosahatchee River and St. Lucie Canal will be determined by evaluation of the physical factors on the above basis and by use of an estimated 30-day average regulatory pumping capacity to be furnished by the Flood Control District upon request from the Corps.
- District will pump at Pumping Stations 7 and/or 8 for release of 500 c.f.s. to the Park at Structure 12. The Corps will reimburse the Flood Control District for such pumping, based on releases of 500 c.f.s. to the Park at Structure 12. No regulatory discharge will be required; however, the Flood Control District may take water from the lake for irrigation needs and other purposes in the agricultural area or pump storm rainfall from the agricultural area either to the lake or the conservation areas as required.
- District will pump at Pumping Stations 7 and/or 6 for release of 140 c.f.s. to the Park at Structure 12. The Corps will reimburse the Flood Control District for pumping, based on releases of 140 c.f.s. to the Park at Structure 12. As in Zone C, the Flood Control District may take water from the lake for

irrigation needs and other purposes or pump storm rainfall from the agricultural area either to the lake or the conservation areas as required. d. Zone E -- When the lake stage is in this zone (between 12.5 feet and 10.5 feet) no pumping or release by gravity from the lake to supply Park needs is required. The Flood Control District Interim Release Schedule (dated 9 December 1964) providing for the release of water to the Park from Conservation area No. 34 at Structure 12 will govern any releases of water to the Park in this some. As in Zones C and D, the Flood Control District may take water from the lake for irrigation needs and other purposes. e. Exceptions to the above actions -- (1) When stages in Conservation Arcas No. 1, 2A, and MA are all above the regulation schedule, no pumping will be required. Regulatory releases will be made from Conservation Area No. 3A at Structure 12 to return the pool to schedule. No reimbursement will be made to the Flood Control District under such conditions. (2) When Lake Okeechobee stages are in those somes requring pumping for the Park by the Flood Control District, that agency would be expected to pump amounts of water to average over a reasonable period of time the 1,000-, 300-, or 140-c.f.s. rates described above; payment by the Corps would be based on discharges to the Park at Structure 12. No pumping will be required from the lake for the Park when the Park has received 500,000 sere-feet from Conservation area No. 3-A is any calendar year. (3) When heavy rains deposit water which must be removed from the portion of the agricultural area served by the Miami, North New River, Hillsboro and West Palm Beach Canals, thereby requiring consation or reduction of the removal of water from Lake Okeechobee, reimbursements to the Flood Control District as described under subparagraphs s, b, and c, above, would not be affected. This is with the provision that the appropriate releases at 5-12 and appropriate pumping operations at S-5A, S-6, S-7 and S-8 are continued during such periods. 4. The Corps of Engineers will reinburee the Flood Control District for performance of work provided herein at a unit cost per acro-foot for the total number of acre-feet of water released at 5-12 less the amount released by # 3 m

gravity at Pumping Stations 7 and/or 8, for the particular period involved. Method of measurement of water discharged at S-12 shall be by mutual agreement between Flood Control District and the Corps. The unit cost will be computed each fiscal year, beginning with FY-1966, by dividing the total annual operating, normal maintenance, and overhead costs for Pumping Stations S-5A, 6, 7 and 8 by the total number of acre-feet of water pumped by these stations for the same period. These costs shall include all items of expense properly chargeable thereto, including but not limited to labor, materials, transportstion, insurance, cost of accolerated replacement of major machinery items, supervision, surveys, rental of plant, tools, and equipment together with other items of empense (exclusive of profit to the Flood Control District). All original time cards or payrolls, material records, and accounts for all charges and expenditures upon which the unit cost is based shall be made available at all reasonable times to allow the Corps of Engineers to check and audit the pertinent costs. Insofar as practicable, separate records shall be maintained by the Flood Control District of all items and accounts which establish the basis for determination of unit costs and invoices.

- 5. The cost of accelerated replacement of major machinery items shall be determined by mutual agreement between the Flood Control District and the Corps. The basic time of pumping at each station shall be that amount shown in the detail design memorandum to which the additional time for pumping to the Park shall be added to arrive at the new increased usage amount used in determining the cost of accelerated replacement.
- 6. The Corps of Engineers shall reimburse the Flood Control District upon receipt of invoices (in quadruplicate) for the agreed total number of scre-feet of vater released at S-12, less amount released by gravity at Pumping Stations 7 and/or 8, for the particular period involved. Partial quarterly payments shall be made on the basis of an estimated unit cost of \$0.20 per screfoot subject to adjustment to actual unit cost at the end of each fiscal year (30 June) beginning with FY-1966 as provided above.
 - 7. The above provisions constitute the entire understanding between the

parties, concerning provision of vater by pumping for Everglades National Park and the lower East Coast Area.

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT, BY ITS COVERNING BOARD

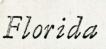
THE UNITED STATES OF AMERICA

By	/s/ G. E. Dail, Jr.	
transitive contract	Executive Director	
	(Official Title)	
and the female states	September 16, 1966	
Date		

/s/R. P. Tabb
R. P. TABB
Colonel Corps of Engineers
(Official Title)
District Engineer
Jacksonville District

13 October 1966

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Board of Conservation

107 WEST GAINES STREET . TALLAHASSEE 32304

FLOYD T. CHRISTIAN, Superintende

March 15, 1966

RECEIVED

Public Instruction

MAR 1 6 1966

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT

Mr. Kenneth J. Bousquet Clerk of Senate Appropriations Subcommittee on Public Works Room 1110, New Senate Office Bldg. Washington, D. C.

Dear Ken:

Enclosed is copy of resolution adopted by the Board of Conservation on March 15, 1966 in which the State of Florida agrees to support the emergency plan of furnishing water for the Everglades National Park.

Copies of correspondence referred to in the resolution, excepting the project authorizing documents, are enclosed herewith to complete your file.

The members of the Florida Board of Conservation have asked me to express their appreciation to you and Mr. Wilhelm for the consideration and effort you have given in coordinating this action.

Sincerely yours,

Randolph hodges Director

· Enclosures

cc: Mr. Gene Wilhelm, Clerk of the House
Appropriations Committee, w/encl.
Honorable Spessard Holland, U. S.
Congress, w/encl.
Honorable Dante Fascell, U. S. Congress
w/encl.
General Jackson Graham, Office of the
Chief of Engineers, w/encl.
District Engineer, Jacksonville District
Corps of Engineers, w/encl.
Central & Southern Fla. Flood Control

District, Attn: Mr. Dail, w/encl.

FLORIDA BOARD OF CONSERVATION

AGREEMENT FOR RELEASE OF WATER TO THE EVERGLADES NATIONAL PARK

RESOLUTION

WHEREAS, the Board of Conservation of the State of Florida, by virtue of Chapter 370, Florida Statutes, is composed of the Governor and Cabinet Officers whose signatures are hereunder affixed, and

WHEREAS, under Chapter 373, Florida Statutes, waters in the state are declared a natural resource, the control and use of which is within the jurisdiction of the state, which in exercising its powers, may establish measures to effectuate the proper and comprehensive utilization and protection of the waters, and

WHEREAS, under Chapter 370 and 373, Florida Statutes, it is specified to be the duty and responsibility of the Board of Conservation to conserve, coordinate, control and enforce provisions of the state law relating to the development and use of the water resources of the State of Florida for the reasonable and beneficial use in the interest of the people of the state, and

WHEREAS, the Corps of Engineers, U. S. Army, in cooperation with the Florida Board of Conservation and the Central and Southern Florida Flood Control District has formulated an emergency or interim plan for pumping and conveying water to the Everglades National Park, as specified in letter of February 17, 1966, from the Jacksonville District, Corps of Engineers to the Board of Conservation, referenced SAJGW, and

WHEREAS, the Central and Southern Florida Flood Control District has agreed with this plan as stated in their letter of February 16, 1966 to the Jacksonville District Engineer, referenced 7-LO-87/X7-ENP-87, and

WHEREAS, the National Park Service has agreed in letter of March 4, 1966, referenced L2415-SLW, that the interim plan, as proposed in the Jacksonville District Engineer's letter referenced above, will be of substantial benefit to the Everglades National Park and is acceptable pending completion of the survey report by the Corps of Engineers on the Everglades Water Supply, which report is now underway, and,

WHEREAS, the National Park Service urges that the State of Florida proceed promptly in implementing the plan and has agreed in conference on March 2, 1966 with the agencies concerned to work with the State, the District, and the Corps of Engineers in every way possible in this matter, and

WHEREAS, the members of the Florida Congressional delegation directly concerned have met in conference with the agencies participating in this plan and concur in its presentation to Congress for approval.

Stoeld hour &

NOW THEREFORE BE IT RESOLVED that the Board of Conservation hereby agrees to furnish the water for the Everglades National Park in accordance with the schedules proposed by the Corps of Engineers and will pay the State's proportionate share of the cost of the works necessary to implement the interim plan, as provided in the Congressional authorizing documents for the flood control project.

BE IT FURTHER RESOLVED that the Board of Conservation agrees to continue and abide by this interim plan until development of a long-range plan, subject, however, to the continued agreement, support, and cooperation of the National Park Service as stated in their letter of March 4, 1966, referenced above.

BE IT FURTHER RESOLVED that the various letters and documents referred to herein are by reference made a part hereof.

PASSED and ADOPTED this 15 day of Mach. A. D. 1966

Governor

Governor

General

Attorney General

Comptroller

Comptrolle

ATTEST:

Manufel Floger

Commissioner of Agriculture



U. S. ARM. ENGINEER DISTRICT, JACKSONVILLE CORPS OF ENGINEERS

P. O. BOX 4970 JACKSONVILLE. FLORIDA 32201

IN REPLY REFER TO:

SAJVG

17 January 1966

Central and Southern Florida Flood Control District P. O. Box 1671 West Palm Beach, Florida 33402

Gentlemen:

Reference is made to telephone conversation from the undersigned to Mr. Storch on 7 January, and with Mr. Dail on 11 January. The subject matter has to do with improved conveyance of water from Lake Okeechobee to the Miami Area and Everglades National Park. The Corps of Engineers is considering the adoption of an emergency plan for this improved conveyance which has been briefly described in the above telephone conversations.

Briefly stated, the emergency plan would consist of improvement of Miami Canal between S-8 and the intersection with L-67 borrow canal, to permit pumping of 500 c.f.s. through S-8 and its conveyance southward. This would cost about \$670,000. North New River Canal would be improved to handle 1,000 c.f.s. from S-7 southward along that canal, through S-11, and thence by borrow canals to the intersection mentioned above. This would cost about \$265,000. Improvement of the borrow canal along L-67 would cost \$2,030,000 and would permit inbank passage of 1,000 c.f.s. to the park. In addition, 500 c.f.s. could be delivered to Area 3B or to the Miami area. This plan would benefit both the park and Miami. The total first cost would be \$2,965,000. Annual pumping cost would vary considerably depending on the Miami area needs, but could average about \$150,000. As any pumping in excess of the amount f urnished the park would be performed for the benefit of the Miami area, the Flood Control District should sustain the cost of pumping for that purpose. Based on the average year, this would amount to \$50,000 of the average annual total of \$150,000.

In general, the new plan would operate so as to pass water to the park and into Conservation Area No. 3 whenever it is necessary to lower the lake levels for flood control, when that will not interfere with

H(1), Z # p over ; Original: Mr. Dail

cc: Engineering Xerox: O&M

JAN 18 1966

CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL DISTRICT

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6-LO X 6-CA3

January 24, 1966

District Engineer
U. S. Army Engineer District, Jacksonville
P. O. Box 4970
Jacksonville, Florida 32201

Dear Sir:

This letter will serve as a partial reply to yours of January 17, 1966 concerning the plan which you are considering for improved conveyance in Conservation Area 3 for distribution of certain waters from Lake Okeechobee to the lower end of Conservation Area 3 and to the Miami Canal downstream of S-151.

In reply to the four questions which you have asked on Page 2 of your letter, I give the following information:

- (1) The Flood Control District and the State of Florida concur in principle with the plan as outlined and will provide the required share of construction costs or 20 per cent of the total. This is conditioned upon additional appropriations beyond that which might reasonably be expected from the Federal Government to fund the present program of construction as now contemplated.
- (2) The Flood Control District will pay for pumping excess Lake water over and above the amounts delivered to the Park.
- (3) The Flood Control District agrees to release excess Lake water to the Park which is pumped with Federal funds under the proposed plan.
- (4) When discharge from Lake Okeechobee is not required for Lake regulation, the Flood Control District and the State will agree to transfer water when an emergency exists. It cannot agree to transfer of water from the Lake to the conservation areas or the Park under the old schedule for Lake regulation or the interim schedule for Lake regulation when the Lake elevation is 12-1/2 feet m.s.l. or less. The District, furthermore, cannot at this

District Engineer January 24, 1966 Page 2

moment advise you of the amount which it might approve for release to the Park at any given point when releases are not required from the Lake, but will be pleased to negotiate further on
this question. Finally, any such agreement must be reviewed and
renegotiated at such time as the new regulation schedule for Lake
Okeechobee goes into effect after completion of presently authorized
works to increase the Lake's conservation storage.

Following discussions with the Governor and the State Board of Conservation we have several other points which should be made:

- (1) The pumping referred to in transfer of water when necessary to lower Lake Okeechobse levels or under emergency conditions to the Park shall be done, as you have stated, when it will not interfere with evacuating flood waters from the agricultural areas, but also at such times and in such amounts when it will not cause undue damage within the agricultural area.
- (2) The agreement of this District on your proposal is with the express understanding that this present plan will in no way prejudice the decisions and judgments at which the Corps of Engineers must arrive concerning survey-review studies now in progress such as the Everglades Water Supply Study, the Martin County Study or others of that nature, this being, in your words, purely an interim plan.
- (3) In the unforeseen event that an agency other than the Corps of Engineers be designated to represent the Federal Government in this Project, the entire matter herein agreed to by this District shall be subject to renegotiation.

As this matter is discussed with your higher authority it will be appreciated if you will obtain for us a reading of the specific authorization under which these improvements for the distribution of water are to be made.

If you need further information, please call on us. It is requested that you keep us advised as this matter progresses and that we have timely further discussion to seek agreement on detail.

Very truly yours.

G. E. DAIL, JR. Executive Director

GED:mtm

cc: State Board of Conservation

bcc: R. S. Miles Engineering, O & M. Legal